



# IMPACT OF MEDITATION ON LEARNING AMONG POTENTIAL LEARNERS OF AYURVEDA UNDERGRADUATES

Dr. Premkumar Badwaik<sup>1</sup> | Dr. Aarati Panchbhai<sup>2</sup>

<sup>1</sup> Associate Professor & HOD, Dept. of Swasthavritta, MGAMC & RC, Wardha.

<sup>2</sup> Professor, Dept. of Oral Medicine & Radiology, Sharad Pawar Dental College, Sawangi (M), Wardha.

## ABSTRACT

Learning is a process in which knowledge is achieved by attentiveness and focus on specific objectives and the learner is able to perceive the knowledge. Meditation practiced over a period of time changes perception, attention and cognition. This project aims to inculcate, assess and obtain the perceptions of 57 potential learners of first year and second year preclinical students which were selected on the basis of their 1<sup>st</sup> PCT scores. The intervention of Aum Chanting in Bhadrasana is intervened daily up to 6 weeks. The scores of each subject after intervention were evaluated in 2<sup>nd</sup> PCT and they were found significant. So it was concluded that meditation was found to be effective in improving the learning of the potential learners as observed through their better academic performance with increase in second PCT scores. The analysis of their perception about intervention revealed the enhancement in their attention, concentration, focus, ability to organize and time management, class communication and stress management.

The study findings suggest that the meditation may be implemented as a promising remedy to enhance the learning among the potential learners.

**KEY WORDS:** Meditation; Aum Chanting; Bhadrasana; Potential learners.

## INTRODUCTION:

Meditation can be defined as a practice where an individual focuses his or her mind on a particular object, thought or activity to achieve a mentally clear and emotionally calm state. It may be done while sitting, repeating a mantra, and closing the eyes in a quiet environment. It is the primary means by which students and teachers experience a deeper self, beyond any self-images of inadequacy as learners, writers or educators. It is through meditation that students and teachers become aware of their own oneness with all things.

Meditation, a form of mental training that has been shown to increase mental focus and reduce stress. It has become an increasingly used tool in both the medical and clinical psychology arena. [1, 2]

Learning is a process in which knowledge is achieved by attentiveness and focus on specific objectives and the learner is able to perceive the knowledge. Meditation practiced over a period of time changes perception, attention and cognition. The practice of meditation helps to attain mental state characterized by deep relaxation along with attention directed inwards. Several studies have reported the effects of practicing meditation in practitioners who were inexperienced as well as those who were experienced.

The study explored the impact of classroom-based meditation as a tool to facilitate learning. Moreover, the impact of meditation on cognitive engagement, mindfulness and academic performance of undergraduate college students was investigated. Additionally, the relationships between mindfulness and cognitive engagement and between these variables and students' academic performance were explored. Furthermore, mindfulness was examined for its potential as an indicator of engagement and meditation as a potential facilitator of engagement. Evidence provided from this research supports the use of methods that cultivate mindfulness, as a valid pedagogical tool, further substantiating the educational efficacy of classroom-based meditation practice. [3]

In ancient Yoga texts the way in which attention is engaged is unique [4]. Meditation is not considered to be associated with increased attention or even with awareness of an experience as it happens. In *Patanjali's Yoga Sutras* (circa 900 B.C.), two meditative states are described, which are supposed to follow a fixed sequence with one leading to the other [5]. The first state is *dharana* (or focusing with effort), confining the mental processes within a defined, limited area. The next state is *dhyana* or effortless expansion which is characterized by the uninterrupted connection between the mind and the object chosen for meditation. In addition to these two mental states, two more mental states when not in meditation have been described in another ancient text (the Bhagavad Gita, compiled circa 500 B.C.) [6].

*Bhadrasana* is one of the meditative asana [7].

The meditation being improving the attention and cognition it may be utilized to enhance the learning of students. Considering this, the present study has been conducted with purpose to evaluate the effect of meditation on learning of the potential learners towards betterment.

## Rationale:

The students are daily engaged in various curricular and co-curricular activities and feel tired. This tiredness affects their physical as well as mental health and ultimately its adverse effect is seen on their learning and performance. Meditation in the form of Aum chanting in *Bhadrasana* can improve the student's learning by enhancing their attention and cognition. So this topic is selected to study the impact of meditation on students' learning.

## AIM & OBJECTIVES:

### Aim:

To study the impact of Meditation on learning among potential learners of MGACHRC.

### Objectives:

1. To inculcate the art of meditation among preclinical potential learners.
2. To assess the effect of meditation on potential learners' learning.
3. To assess the perception of potential learners about this intervention.

## MATERIALS & METHODS:

**Locus of study:** The study was conducted in the department of Swasthavritta, Mahatma Gandhi Ayurved College, Hospital & Research centre, Salod (H), in collaboration with School of Health Professionals Education and Research, Datta Meghe Institute of Medical Sciences (Deemed to be University), Sawangi (Meghe), Wardha.

**Study Design:** Prospective interventional study.

**Study Duration:** Total study duration was 12 months.

**Study population:** The study population was preclinical undergraduate Ayurved potential learners (First year and second year potential learners). Total 57 students were selected and enrolled.

**Meditation Group (Study Group):** 57

### Study Protocol: Selection of Potential learners

The potential learners from the preclinical phase in Ayurveda i.e., 1<sup>st</sup> and 2<sup>nd</sup> year undergraduate students were enrolled for the study. The potential learners were derived on the basis of 1<sup>st</sup> PCT scores.

The students who have failed or just passed with 50 % marks students in the preclinical phase and who were willing to participate in the study were included. Accordingly, total 57 students could be categorised as potential learners.

At the outset the study protocol was explained and the consent was obtained from each participant.

**Orientation & Sensitization**

The potential learners were oriented regarding the intervention of the study. The process of meditation had been demonstrated to them.

**Step of Meditation:**

The students had been instructed as follows:

- Initially to sit in posture of Bhadrasana
- While sitting in the Bhadrasana posture, the Aum Chanting was to be done for 10 minutes. As per *Hathayogpradipika (Sutra 1/38-43)* Bhadrasana is beneficial in stability of mind and regular use of this asana purifies the mind. It also helps to keep calm and normal all muscular systems.
- The total 57 potential learners from had been intervened by for six weeks [8, 9] at Yoga hall at MGACHRC.

The effect of the meditation on learning of potential learners was assessed through their performance in the next PCT i.e., 2<sup>nd</sup> PCT which immediately followed after intervention.

Also, the perception of the participants about the intervention was obtained using prevalidated feedback questionnaire form. The feedback form contains 10 items which includes 7 close ended and 3 open ended items.

Questionnaire was based on 5 point Likert scale was prepared and validated to evaluate students' perception for intervention, the 5 point Likert scale (1 – Strongly Disagree to 5 – Strongly Agree) was used to record responses for items 1-7. Item no. 8, 9 & 10 were open ended questions where students were asked about increased focus & overall performance by meditation and suggestions which should be further incorporated for improvement.

**Data Analysis & statistics plan:****• PCT Scores**

To study the impact of meditation, the 1<sup>st</sup> and 2<sup>nd</sup> PCT scores were compared.

**• Performance**

The overall performance of study subjects and difference of scores in subjects were analyzed using inferential statistics (Students paired t – test)

**• Feedback questionnaire**

i) For close ended items – Descriptive statistics was used.

ii) For open ended items – Thematic Analysis was used.

Statistical analysis was done by using descriptive and inferential statistics using student's paired t test and software used in the analysis was SPSS 22.0 version and  $p < 0.05$  is considered as level of significance. Response to close ended and open ended questions were analysed quantitatively and qualitatively respectively.

**Observation & Results:**

The present prospective interventional study was undertaken to assess the impact of meditation among potential learners of Mahatma Gandhi Ayurved College, Hospital & Research Centre, Salod (H), Wardha. For the present study total 57 students (27 from First year and 30 from Second year) were enrolled.

To assess the impact of Meditation, 1<sup>st</sup> and 2<sup>nd</sup> PCT scores of each study subject of 1<sup>st</sup> & 2<sup>nd</sup> year were compared. There was significant difference in between the PCT scores with improvement in their 2<sup>nd</sup> PCT scores as compared to 1<sup>st</sup> PCT scores.

**Table 1: Comparison of I<sup>st</sup> PCT and II<sup>nd</sup> PCT Scores of 1<sup>st</sup> year students**

Subject	Theory	SD	t- value	Practical	SD	t- value
Padarth Vigyan	PCT II	42.11	5.73 P = 0.0001,S	PCT II		
	PCT I	38.05		PCT I		
	Difference of Marks			Difference of Marks		
Sanskrit	PCT II	41.48	5.94 P = 0.0001,S	PCT II		
	PCT I	36.18		PCT I		
	Difference of Marks			Difference of Marks		
Kriya Sharir	PCT II	29.07	8.17 P = 0.0001,S	PCT II	42.77	7.47 P = 0.0001,S
	PCT I	23.83		PCT I	36.40	
	Difference of Marks	5.87		Difference of Marks	6.37	
Rachana Sharir	PCT II	33.85	4.70 P = 0.0001,S	PCT II	42.88	13.96 P = 0.0001,S
	PCT I	30.66		PCT I	41.55	
	Difference of Marks	3.18		Difference of Marks	3.33	
Moulik Siddhanta	PCT II	36.07	6.73 P = 0.0001,S	PCT II	28.11	14.42 P = 0.0001,S
	PCT I	31.11		PCT I	25.22	
	Difference of Marks	4.96		Difference of Marks	2.88	

S - Significant ; NS - Not Significant

**Table 2: Comparison of I<sup>st</sup> PCT and II<sup>nd</sup> PCT Scores of 2<sup>nd</sup> year students**

Subject	Theory	SD	t- value	Practical	SD	t- value
Dravyaguna	PCT II	39.03	7.70 P=0.0001,S	PCT II	81.61	3.69 P=0.001,S
	PCT I	28.29		PCT I	72.06	
	Difference of Marks	10.74		Difference of Marks	9.54	
RogNidan	PCT II	38.32	2.10 P=0.044,S	PCT II	46.48	3.61 P=0.001,S
	PCT I	35.24		PCT I	45.16	
	Difference of Marks	3.08		Difference of Marks	1.32	
Rasashastra and BK	PCT II	35.14	6.92 P=0.0001,S	PCT II	95.09	2.87 P=0.007,S
	PCT I	20.48		PCT I	93.74	
	Difference of Marks	14.66		Difference of Marks	1.35	
Charak (P)	PCT II	36.16	1.98 P=0.056,NS	PCT II	33.58	3.32 P=0.002,S
	PCT I	32.33		PCT I	32.87	
	Difference of Marks	3.82		Difference of Marks	0.70	

S - Significant ; NS - Not Significant

It has been observed that the differences in between 1<sup>st</sup> & 2<sup>nd</sup> PCT scores were significant in both 1<sup>st</sup> and 2<sup>nd</sup> years potential learners towards increase in scores in 2<sup>nd</sup> PCT except for the subject of Charak where the 2<sup>nd</sup> PCT score was higher although the difference was not significant.

After completion of intervention to all study participants, the feedback was obtained from them. There were seven closed ended questions and three open ended questions in the questionnaire; following was question wise analysis of feedback of potential learners.

Table 3:- Analysis of Feedback Questionnaire (Que. 1 – 7)

Sr. No.	Perception /Feedback	SD % (n)	D % (n)	N % (n)	A % (n)	SA % (n)
1.	This intervention of Meditation helped me to improve my attention towards academic needs.	0% (0)	1.75% (1)	5.26% (3)	50.88% (29)	42.11% (24)
2.	It helped me to concentrate in college activities	0% (0)	0% (0)	8.77% (5)	63.16% (36)	28.07% (16)
3.	It improved my ability to organize and time management.	0% (0)	1.75% (1)	19.30% (11)	29.82% (17)	49.12% (28)
4.	It helped me to enhance my academic performance.	1.75% (1)	0% (0)	19.30% (11)	45.61% (26)	33.33% (19)
5.	It helped to handle the stress properly.	0% (0)	5.26% (3)	10.53% (6)	64.91% (37)	19.30% (11)
6.	It helped me to enhance my class communication with teacher.	0% (0)	3.51% (2)	17.54% (10)	64.91% (37)	14.04% (8)
7.	I am emotionally satisfied with meditation.	0% (0)	3.51% (2)	5.26% (3)	49.12% (28)	42.11% (24)

SA - Strongly Agree ; A - Agree ; N - Neutral ; D - Disagree ; SD - Strongly Disagree

It was observed that for most of the items in the questionnaire, the students agreed towards the improvement of the attribute mentioned and the students strongly agreed for items 1,3 & 7 i.e., it helped to improve their attention, ability to organize and emotional satisfaction.

Table 3:- Analysis of Feedback Questionnaire (Que. 1 – 7)

Sr. No.	Perception /Feedback	Feedback	No. of Students
8.	Do you think it has improved your focus?	Yes	91.23% (52)
		No	8.77% (5)
		Improved concentration level	5.26% (3)
		Improved focus	7.02% (4)
		Need more practice	1.75% (1)
9	This intervention helped you to enhance your overall performance?	Yes	85.96% (49)
		No	14.04% (8)
		Performance growth after meditation	1.75% (1)
10	Any suggestions / Remark	Duration of meditation should be increased	5.26% (3)
		Feeling calm after meditation	3.51% (2)
		Meditation should be practiced daily	7.02% (4)

For Question 8, the 91.23% of the students were in agreement towards their improvement in focus with the suggestion that they need more practice (1.75%).

For Question 9, the 85.96% of the students were in agreement towards their overall performance. For item 10, the 15.79% of the students given their suggestions about the intervention as mentioned, the 'duration of meditation should be increased, it should be practiced daily and that they were feeling calm after meditation.'

## DISCUSSION:

The present research work has been carried out to study the impact of meditation on learning among potential learners of Mahatma Gandhi Ayurved College, Hospital and Research centre. Meditation in the form of Om chanting in *Bhadrāsana* (asana) [7] has been carried out on selected identified potential learners.

The intervention of Meditation was found to be effective in improving the learning of the potential learners as observed through their better academic performance with increase in second PCT scores. The study finding was corresponding to the observations by Ching H *et al* [10], Tang Y *et al* [11], Nepora L [3], Sanger K *et al* [12], Morrison A *et al* [13], Keye M *et al* [14] and Harne A [15].

Lin J *et al* [16] investigated the influence of mindfulness meditation (MM) on short-term and long-term academic performance. The relationship between the meditation depth and short-term academic performance is further explored. Compared to the control group, the experimental group had better short-term academic performance but similar long-term academic performance. Within the experimental group, students with high meditation depth achieved better short-term academic performance than those with low meditation depth. In a randomized controlled trial with college students, (Hall, 1999) [17] randomly assigned 56 undergraduates to two study groups, one of which included concentration-based meditation. The meditation intervention included a one-hour session of meditation instruction twice a week for the academic semester. Meditation was practiced for 10 minutes at the start and conclusion of each one-hour study group session, and this group was instructed to meditate at home and before exams. The treatment group had significantly higher GPA scores compared to the control group. The findings were substantiated by meditation programs delivered at DePaul University, Chicago (Repetti, 2010) [18]. The importance of reflection in education has also been emphasised and the conclusion drawn that several reflective practices can act as "metacognitive attention-training exercises" (Repetti, 2010) [18].

Rosenzweig S *et al* [19] explored the effectiveness of the Mindfulness-based stress reduction (MBSR) intervention for Second-year students in a prospective, nonrandomized, cohort-controlled study. According to Rosenzweig S *et al* [19], the medical students confront significant academic, psychosocial, and existential stressors throughout their training. Mindfulness-based stress reduction (MBSR) is an educational intervention designed to improve coping skills and reduce emotional distress. They observed the significant effects Tension-Anxiety, Confusion-Bewilderment, Fatigue-Inertia, and Vigor-Activity subscales to conclude that the MBSR may be an effective stress management intervention for medical students. At similar, Tang *et al* observed that integrative body-mind training (IBMT) group showed greater improvement in conflict scores on the Attention Network Test, lower anxiety, depression, anger, and fatigue, and higher vigour on the Profile of Mood States scale, a significant decrease in stress-related cortisol, and an increase in immunoreactivity.

Garland and Gaylord (2009) [20] confirmed the many positive aspects resulting from mindfulness meditation and the evidence that exists for improvement of the affective domain. Contemplative observation influences intellectual thoughts on areas of critical thinking, insightfulness, self-reflection and ethical awareness. Consciously assisting the application of contemplative competence in education provides students with the chance to cultivate their individual abilities to enhance their learning outcomes (De Souza, O'Higgins-Norman, & Scott, 2009). [21] Further study is recommended to determine which self-compassion elements and individual influences are present in mindful attitude and what the long-term benefits would be to everyday life (Ott & Holzel, 2006) [22]. From an affective learning perspective, mindfulness meditation helps to temporarily disengage the mind from external stimuli to focus inwardly, immediately increasing awareness of thoughts, feelings and emotions.

Harne A, 2017 [15], also mentioned that in order to maximize learning, teachers must prepare the mental states of their students through mindfulness meditation program. They found an overall increase in the attention, working memory, executive functions, and receptivity towards learning as perceived by the teacher and students. Students with the lowest levels of cognitive skills and receptiveness were benefited the most significantly from the mindfulness meditation program.

The analysis of the perception of students about meditation as an intervention revealed the increase in their attention, concentration, focus, ability to organize and time management, class communication and stress management. The findings were in accordance with findings by Lin J *et al* [16], Helber *et al* [23], Kozasa EH *et al* [24], Jevning R, Anand R *et al* [25].

Lin J *et al* [16] investigated the influence of mindfulness meditation (MM) on short-term and long-term academic performance. The questionnaire results revealed that most students enjoyed the process and agreed that the intervention improves in-class learning efficiency. Through the perception of the students the factors that influences learning such as attention, concentration and focus, organization of things and time management, class communication, Enhancement in academic & overall performance, stress management and emotional satisfaction, suggestions were assessed after the intervention.

## Improved attention:

In this study, it has been observed that out of 57 participants half of the participants i.e., 29 (50.88%) agreed and 24 (42.11%) strongly agreed that meditation in the form of Om chanting has increased their attention towards study and academic needs. The scores of individual subjects of the 1<sup>st</sup> and 2<sup>nd</sup> year potential learners of I PCT and II PCT have shown that there was increase in marks & the results were statistically significant which proves that there was improvement of attention due to regular practice of meditation. (Helber *et al*. 2012) [23] found that students need to meditate for a certain amount of time before any real changes in cognition can be experienced. Improvement in attentional task performance were consistent was proved in one of the research. Experienced meditators can develop the ability of sustained attention during meditation practice. Here we are suggesting that this ability can also be generalized for attention tasks outside formal meditation practice. If this is the case, meditation can have sustainable effects in brain circuitry and behaviour related to attention abilities. This observation may support reports that meditation training develops the ability of keeping attention to execute an attention task with less interference from



distracters (Brefczynski-Lewis *et al.*, 2007) [26].

### Better Concentration & Improved Focus:

The 52 (91.23%) potential learners agreed that this intervention of meditation has improved their focus to concentrate on various subjects to improve their scores in exams. In the present study, more than half of the participants i.e., 36 (63.16%) agreed and 16 (28.07%) are highly agreed that there is improvement in their concentration and they can do their college activities more precisely. 52 (91.23%) potential learners agreed that this intervention of meditation has improved their focus to concentrate on various subjects to improve their scores in exams.

Mindfulness training may increase participants' cognitive performance by improving their mood and reducing mind wandering. Mind wandering and mood disturbances can negatively impact learning and memory. The anterior cingulate cortex (ACC), is implicated in conflict monitoring in the engagement of cognitive control, promoting adjustments in behaviour such as the inhibition of motor actions during a task. (Kozasa EH *et al* 2012) [24].

### Ability to Organize and Time management:

The 17 participants (29.82%) agreed as well as 28 (49.12%) strongly agreed that they were more able to organize the different types of things and due to increased concentration the time required for performing various tasks was reduced. The scores in different subjects have shown that there was proper time management in handling respective subjects. As per statistics the results was found to be significant. Meditation increases regional cerebral blood flow in the frontal and anterior cingulate regions of the brain, (Jevning R, Anand R, 1996) [25] increases efficiency in the brain's executive attentional and organizational network (Chan D, Woollacott 2007) [2].

### Better class communication:

It includes communication between teachers and students in classroom activities containing verbal and non - verbal part. (Ching H, Malcom K, 2015) [10] After meditation 37 (64.91%) agreed and 8 (14.04%) potential learners were strongly agreed that it has helped them to boost their confidence due to which they have better communication with teachers and friends. So meditation has improved their level of confidence through which they have gained good scores in the various subjects.

### Enhancement in Academic & overall performance:

After intervention of meditation, it has been found that there was a significant difference of marks in most of the subjects they have learnt. The results were found to be significant statistically in both 1<sup>st</sup> and 2<sup>nd</sup> year potential learners. 26 (45.61%) participants agreed and 19 (33.33%) strongly agreed that there was enhancement in their academic performance. Improved memory (Zeidan F *et al*) [27] has been seen in meditation.

The 49 (85.96%) potential learners agreed that there was enhancement in overall performance of all subjects after this intervention. A series of studies on short term mindfulness based intervention on undergraduate students suggested that the associated improvements in executive function are related to the neural circuitry specific to the anterior cingulate cortex and the autonomic nervous system.

### Stress management & Emotional satisfaction:

After meditation, the mind and body becomes cool and relaxed. So equilibrium between mind and body was established. Due to this mental stress or physical fatigue was minimized. The 37 (64.91%) agreed and 11 (19.30%) potential learners were strongly agreed that meditation has helped them to handle the stress adequately.

The (49.12%) agreed whereas 24 (42.11%) strongly agreed that they were emotionally satisfied by the meditation. They feel energized and relaxed mentally and physically. It is suggested that the process of mindfulness training can promote a balance between a relaxed and vigilant state of mind and thereby enhancing cognition through a better ability to self - regulate emotions. (Wang DJ *et al* 2011) [28].

The few of the students 3 (5.26%) have suggested that duration of meditation should be increased, 2 (3.51%) suggested that they have felt calm after meditation and 4 (7.02%) have suggested that it should be practiced daily.

The various factors may influence the meditation experiences & practices as spiritual goals, belief systems, traditions, liturgical interactional & environmental properties, personality traits and the way of life. (Kiran Kumar, 2002) [29].

Personality traits also play a significant role in meditation. It is well known in the Indian tradition that sattvaguna facilitates meditative life better as compared to rajoguna and tamoguna. It is to be noted that all the three *gunas* are present in all the individuals and it is the preponderance of one over the other which leads to the labelling of persons as *sattvic*, *rajasic* and *tamasic* type. According to Indian psychological perspectives, regular practice of meditation will lead to reduction in *rajasic* and *tamasic* qualities and increase of *sattvic* qualities.

After one begins meditating there are facilitative and disturbing factors that are

internal and external. Internal facilitative factors include relaxed state, constant practice and persistence, value attached to the goal and practice, and enjoying one's work and feeling satisfaction in it. External facilitative factors include quiet and peaceful atmosphere, lack of problems in family and work and few external demands. Internal disturbing factors consist of worry, conflicts, tensions, tiredness, lack of discipline, and one's attitude towards meditation. The external factors include travel, work schedules, family commitment, physical environment, and problems in work and sporadic life style.

Thus along with the meditative practices, other factors needed to be taken care so as to have the act of meditation to be productive.

### CONCLUSION:

- The intervention of Meditation was found to be effective in improving the learning of the potential learners as observed through their better academic performance with increase in second PCT scores.
- The analysis of their perception about intervention revealed the enhancement in their attention, concentration, focus, ability to organize and time management, class communication and stress management.
- The study findings suggest that the meditation may be implemented as a promising remedy to enhance the learning among the potential learners.

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